

C L A I M S

1. A process for manufacturing a tyre (1) comprising the steps of:
  - 5       • providing a carcass structure (2) having at least one carcass ply (2a) associated to at least one annular reinforcing structure (3);
  - providing at least one structural element (6; 7) of a green tyre by laying down at least one  
10       elongate element (24) made of crude elastomer material in a position radially external to said carcass structure (2);
  - providing said at least one structural element of the green tyre with at least one marking by  
15       means of an inkjet marking device (40);
  - introducing the green tyre into a moulding cavity, and
  - curing the green tyre.
2. Process according to claim 1, wherein said at least  
20       one structural element is a tyre tread band.
3. Process according to claim 1, wherein said at least one structural element is a tyre sidewall.
4. Process according to claim 1, wherein said at least one structural element is a tyre tread band and a  
25       tyre sidewall.
5. Process according to claim 1, further comprising the step of providing a belt structure (5) in a position radially external to said carcass structure (2).
- 30 6. Process according to claim 1, wherein the step of providing at least one structural element (6; 7) is carried out by winding at least one elongate element (24).

7. Process according to claim 6, wherein the step of winding comprises the step of forming a plurality of coils axially arranged side-by-side and/or radially superposed.
- 5 8. Process according to claim 1, wherein the step of providing the carcass structure (2) is carried out on a manufacturing drum (18).
9. Process according to claim 1, wherein the step of providing the belt structure (5) is carried out on  
10 a manufacturing drum (18) or on an auxiliary drum (18').
10. Process according to claim 8 or 9, further comprising the step of positioning said manufacturing drum (18) or said auxiliary drum  
15 (18') in proximity of a delivery member (22).
11. Process according to claim 10, further comprising the step of delivering the at least one elongate element (24) by means of said delivery member (22).
12. Process according to claim 11, wherein the step of  
20 delivering is performed while carrying out a relative displacement between the delivery member (22) and the manufacturing drum (18) or the auxiliary drum (18').
13. Process according to claim 11, wherein the step of  
25 delivering is performed while rotating the manufacturing drum (18) or the auxiliary drum (18') about its rotation axis (X-X).
14. Process according to claim 12, wherein the relative displacement between the delivery member (22) and  
30 the manufacturing drum (18) or the auxiliary drum (18') is carried out by imparting to the manufacturing drum (18) or to the auxiliary drum

- (18') a translational movement along a direction substantially parallel to its rotation axis (X-X).
15. Process according to claim 1, further comprising the step of positioning the manufacturing drum (18) or the auxiliary drum (18') in proximity of the inkjet marking device (40).
16. Process according to claim 1, wherein the step of providing said at least one structural element (6; 7) with at least one marking is performed while rotating the manufacturing drum (18) or the auxiliary drum (18') about its rotation axis (X-X).
17. Process according to claim 1, wherein the step of providing the carcass structure (2) comprises the steps of producing and assembling the carcass structure (2) on a toroidal support (28).
18. Process according to claim 5, wherein the step of providing the belt structure (5) comprises the steps of producing and assembling the belt structure (5) on a toroidal support (28).
19. Process according to claim 17 or 18, wherein the toroidal support (28) is substantially rigid.
20. Process according to claim 17 or 18, further comprising the step of positioning said toroidal support (28) in proximity of a delivery member (35).
21. Process according to claim 20, further comprising the step of delivering the at least one elongate element by means of said delivery member (35).
22. Process according to claim 21, wherein the step of delivering is performed while carrying out a relative displacement between the delivery member (35) and the toroidal support (28).

23. Process according to claim 21, wherein the step of delivering is performed while rotating the toroidal support (28) about its rotation axis (X-X).
24. Process according to claim 22, wherein the relative displacement between the delivery member (35) and toroidal support (28) is carried out by imparting to the toroidal support (28) a translational movement along a direction substantially parallel to its rotation axis (X-X).
- 10 25. Process according to claim 1, further comprising the step of positioning the toroidal support (28) in proximity of the inkjet marking device (40).
26. Process according to claim 1, wherein the step of providing said at least one structural element (6; 7) with at least one marking is performed while rotating the toroidal support (28) about its rotation axis (X-X).
- 15 27. Process according to claim 1, wherein the inkjet marking device (40) comprises at least one printhead.
- 20 28. Process according to claim 27, wherein the printhead is provided with at least one nozzle (41).